



## Expanding Computing Education Pathways (ECEP) Maryland Steering Committee Meeting

**Monday, January 11, 2016**

UMBC Training Centers  
6996 Columbia Gateway Dr.  
Columbia, MD 21046

### Meeting Participants

Tiara Booker-Dwyer, MSDE  
Lissa Clayborn, CSTA  
Linda Cooper, Towson University  
Marie desJardins (ECEP PI), UMBC  
Megean Garvin, UMBC  
Joe Greenawalt, North Point High School, Charles County  
Cindy Hasselbring, MSDE  
Sharon Kramer, Howard County Public School System  
Heather Lageman, MSDE  
Raquel Marshall, NASA  
Felicia Martin Latief, Prince George's County Public Schools  
David May, USM  
Pat Mikos, MSDE  
Dianne O'Grady-Cunniff, Charles County Public Schools  
Jan Plane, UMD -- College Park  
Jennifer Smith, Digital Harbor High School, Baltimore City  
Anne Spence, UMBC  
Chuck Trautwein, Garrett County Public Schools

*Attended via video conference*

Christine Barrow, Prince George's Community College

*Invitees not present:* June Ahn, UMD -- College Park; Barry Burke, ITEEA; Henry Johnson, MSDE; Tracy Irish, UMBC; Christina Morris, Catonsville High School, Baltimore County; Davina Pruitt-Mentle, National Cyberwatch Center; Karen Salmon, MSDE; Nancy Shapiro, USM; Sarah Spross, MSDE; Rick Williams, Northrop Grumman; Pat Yongpradit, Code.org

### Summary

This NSF-supported ECEP Alliance mini-grant provides support for statewide reform of CS education. This meeting was the second in a series of state-wide meetings to address CS education issues in Maryland.

### P-12 CS Standards

At the National level, code.org and CSTA are leading efforts to write CS K-12 education standards. The national standards will be released in April 2016. The MD version will also include pre-K and will be released in June 2016. There are MD writers and leaders involved in the national effort. Therefore, no significant changes to the MD version are expected. Several members of this steering committee (Marie, Jan, and Jennifer) have already been invited to be reviewers for the national CS standards.

MSDE intends to share the MD draft at the MD CS education summit on April 12<sup>th</sup>. Tiara mentioned that when she asked for school districts to send her a point of contact (POC) for CS education, she is receiving 1-3 names per school district. For the summit, we will reserve at least 4 registration slots per school district in order to make sure that all districts have representation.





### **Tech ed courses/approvals**

Foundations of tech (FOT) class now has some integration with CS. The curriculum has been updated with a blended approach of traditional and 21st century technology. Each school district determines if new courses (i.e. AP CSP) that have MSDE approval for multiple HS requirements will count as tech ed or another subject area (i.e. math credit). Tiara mentioned that most the tech ed teachers are trained by Millersville University (PA) or Eastern Shore University (MD). There is resistance to completely move away from the traditional “shop” tech ed class. There are also concerns that the new AP CSP class will remove the highly performing students from the other tech ed class leaving behind the other students. However, AP CSP courses are designed with differentiation of instruction and accessibility for all students. Therefore, all students are encouraged to take AP CSP.

### **In-service teacher training**

The cost for teacher training includes training, materials, travel, and often lodging. During the school-year training is limited to minimal professional development days (e.g. Charles County has only 3 half days for teachers, and many areas need time with teachers). It is also not usually recommended to take teachers out of the classroom due to time away from students and cost of substitute teachers. Time afterschool and weekends is limited by teacher duties such as advising afterschool activities/clubs, coaching sports, or second jobs.

For teachers who begin to teach CS outside of their original content area (art, music, science, math, business, etc.), they report having low comfort levels and being overwhelmed. COP online helps, but individualized CS mentors/coaches might be more effective. The train the trainer model, which is similar to PLTW Launch model at the elementary level, works well. The goal is to minimize the CS teacher isolation and build a COP to support all teachers who are teaching a CS course. Administration support needs to align with teacher training such as evaluation for teaching out of content area needs to be significantly different than evaluation for highly qualified CS teachers.

### **CS Certification and Endorsements**

Most CS endorsements are “side door” certification in which a teacher is certified in a subject area and endorsed to teach CS without a degree in CS. Teachers need 30 credit hours for CS but content of the courses are not clearly delineated. The framework might be useful for determining content of teacher training. Rigorous and consistent course lists need to be developed and recommended. However, a course list is not meant to be a barrier for teachers. For example, all math teachers must take a calculus class, but most CS teachers have never taken a data structures class. There needs to be a process to help in-service teachers transition. Mandatory coaching by a CS mentor was recommended. If there is a CS Mentor program, what does the mentor structure look like? Possibly utilize a CS induction program with local induction coordinators to promote buy-in and use face-to-face and hybrid training methods. An issue will be funding the coordinator position.

Higher education needs to also prepare new teachers and needs to decide how this should occur. There needs to be a CS methods course. At the very least, there should be a course framework created and shared among universities. Funding for this effort needs to be identified. There also needs to be multiple pathways for undergraduates and in-service teachers to obtain CS certification.

MD could become the “east coast hub” for CS professional development. This would require new funding and coordination of all CS education efforts (CS Matters, code.org, PLTW, AP CS , etc.) There is a possibility to apply for funding for this effort.

### **Professional School Counselors (Formerly Guidance Counselors)/Administrator Training**

The MSDE contact for school counseling is Michael Linkins. He is willing to work with this group to share CS education information with school counselors across MD. Some school districts know about CS pathways and others do not. It is important for us to send him electronic flyers that are ready to go for newsletters, emails, communication, etc.





## Redefining ECEP MD Goals

A broad-ranging discussion by a core group led to a series of increasingly ambitious goals that will culminate in a 15-year goal of offering computing-related content to every student throughout their P-12 education. “Computing” in this context includes not just digital literacy, but computational thinking and computer science, as appropriate for the students’ age and developmental level. “Training” for teachers refers to comprehensive curricular and pedagogical training (such as the workshops offered by CS Matters in Maryland, Code.org, and Project Lead the Way). The following goals were edited during the steering committee meeting, which included additional statewide stakeholders than the original core group.

- **1-year goals**
  - An ambitious P-12 CS standards framework has been defined and accepted in Maryland
  - Teachers have been trained to teach AP CS Principles and/or ECS in at least half of the high schools in each public school system in Maryland.
  - Professional school counselors in at least half of the high schools in each Maryland public school system have received information about how to advise students on taking computing courses.
- **2-year goals**
  - AP CS Principles is listed in the course catalog, and has been approved as a Technology Education credit, in every public school system in Maryland.
  - AP CS Principles is actively taught in at least half of the high schools in each public school system in Maryland.
- **3-year goal**
  - The CS endorsement transcript review process for teachers has been improved and standardized across the state.
  - Each school district in MD holds some level of CS education event (hour of code, CS ed week, CS ed month, etc.).
- **4-year goal**
  - Every public high school in Maryland has at least one teacher who has been trained to teach ECS, AP CS Principles, or PLTW CS and at least one professional school counselor is able to provide information to student and parents about computing course offerings.
- **5-year goals**
  - High-quality CS courses, including AP CS Principles, are offered in every high school in Maryland, and taught by well trained teachers.
  - There are at least three undergraduate and three graduate programs, all active and approved, that offer CS teacher certification in the state of Maryland.
  - All public school systems in Maryland have aligned their P-12 CS curriculum with the state P-12 curriculum standards framework.
  - An assessment framework and implementation guides for computing curricula have been created.
- **10-year goals**
  - Rigorous computing courses and content are offered in every public school in Maryland.
  - Every public high school student in Maryland takes at least one course with substantive computing content before graduation.
  - Every public school system in Maryland has encompassed all of the state P-12 computing standards.
- **15-year goals**
  - **Computing is offered to every student in Maryland throughout their P-12 education.**
  - Every secondary teacher who teaches CS classes has a solid CS certification or endorsement based on the new transcript standards and programs.

